ABSTRACT OF THE DISCLOSURE

Formulations for enhanced mucosal absorption of heparin are disclosed. In one preferred embodiment, an amphiphilic heparin derivative composed of heparin covalently bonded to a hydrophobic agent is dissolved in a water phase, the water phase is then dispersed in an organic phase such that an emulsion is formed, and then the emulsion is dried to obtain a powdered composition. In another embodiment, the amphiphilic heparin derivative is dissolved in water or a water/organic co-solvent, the water or co-solvent is then dispersed in an oil phase, and then the water or co-solvent is evaporated, resulting in the amphiphilic heparin derivative dispersed in the oil phase. In another embodiment, the amphiphilic heparin derivative is dissolved in an aqueous solvent, a surfactant is mixed with the aqueous solvent and nanoparticles of the amphiphilic heparin derivative are disrupted, resulting in nanoparticles having surfactant molecules associated with the hydrophobic agent on the outside of the nanoparticles. Compositions made according to these methods are also described.